NERT Site Goals, Strategy, and 2016~~5~~ Milestones – Executive Summary

NDEP has prepared this document with EPA to guide the overall approach to scoping, prioritizing, and implementing Environmental Actions to address Henderson Legacy Conditions associated with the former Tronox/Kerr-McGee site. This is intended to be a dynamic, living document that incorporates new information and addresses significant challenges.

What are the Site Goals?

~~NDEP will maximize~~ Utilization of NERT/Anadarko Settlement Funds will be maximized for the benefit of water quality that has been affected by the NERT site in the Henderson/Las Vegas Wash/Lake Mead area, within the parameters of the Settlement Agreements.

Given the persistence of perchlorate, uncertainty of health effects associated with its ingestion via drinking water, and uncertainty for timing of the Safe Drinking Water Act maximum contaminant level goal and maximum contaminant level, NDEP will consider a broad range of cleanup options that will reduce perchlorate in Lake Mead to below the lowest anticipated health protective drinking water levels.

~~NDEP will select~~ The final~~a~~ remedy ~~that~~will reduces ~~mass loading of~~ perchlorate ~~to~~ concentrations in the Las Vegas Wash from the current ~~50 to 100~~40 µg/l to 60 µg/l ~~pounds per day~~ to below the Nevada Provisional Action Level of 18 µg/l~~**10 pounds per day**~~. ~~This would correspond to reduction in Lake Mead drinking water intake concentrations from the current annual maximum, 3 µg/l, to **less than 0.5 µg/l.**~~ Additionally, the final ~~selected~~ remedy will also meet the Ultimate Remedial Action Objective (RAO) of aquifer restoration.

As necessary to protect Las Vegas Wash and Lake Mead water quality, ~~NDEP will require that~~ the ~~systems~~ constructed to intercept NERT contaminants from Legacy Conditions at the Henderson facility (including perchlorate, chromium, and potentially Total Dissolved Solids (TDS) and chloroform) will adequately treat all contaminants present below applicable or agreed upon concentrations before discharge, regardless of source.

Construction of the final NERT Site Remedy to address hazardous substance releases from the site in both soil and groundwater will begin in ~~2021~~2022.

While the final remedy is being selected and constructed, ~~NDEP will direct NERT to increase~~ mass removal of perchlorate will be increased from the core groundwater plume and site source areas from the current 1,250 pounds per day to **2,000 pounds per day or above**.

~~NDEP will reduce~~ T~~t~~he time frame from concept to implementation will be reduced for executing interim actions and final remedy and use local resources and expertise where appropriate.

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Commented [JD1]: Because the original goal of 10 lbs/day was more of an arbitrary perchlorate loading number and not an ARAR or TBC the NDEP feels that using the Nevada Provisional Action Level was a more appropriate goal.

Commented [JD2]: Recommend we remove this reference to concentrations in Lake Mead .

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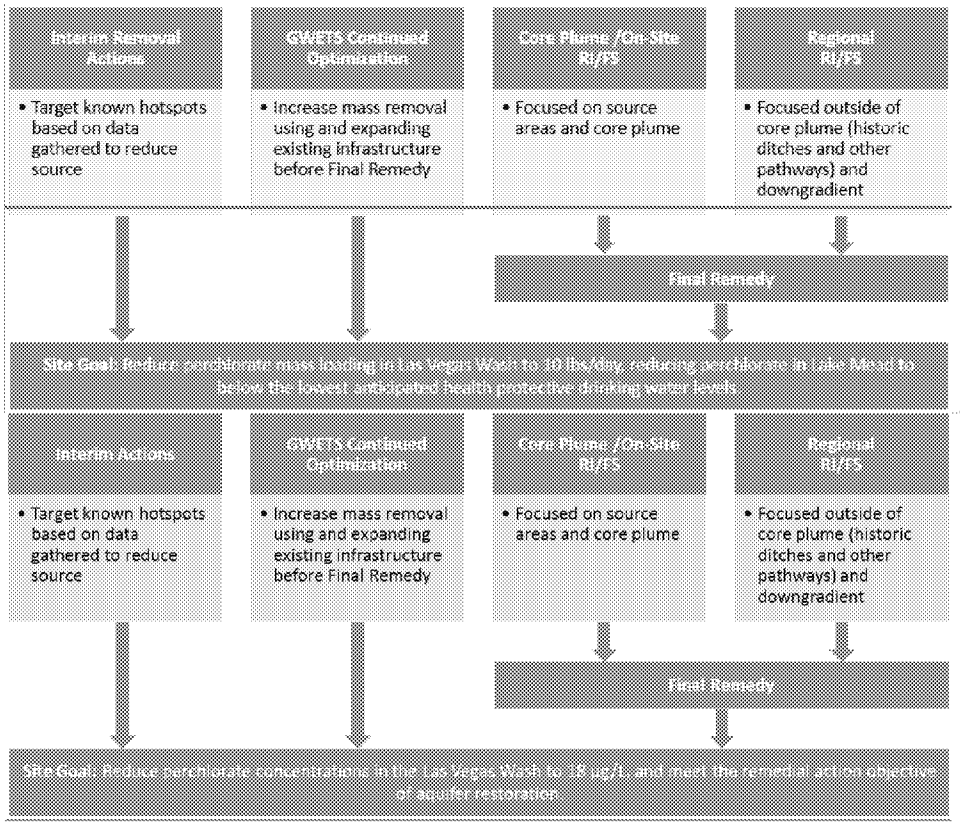
Commented [FA3]: When and for what reasons did this deadline get pushed back?

~~NDEP will provide s~~Stakeholders will be provided meaningful opportunities for input on interim actions and final remedy selection. At the same time, ~~NDEP will maintain~~ an aggressive schedule will be maintained and NDEP will make the final decisions on remedy selection.

What is our Strategy to Achieve the Goals?

A multi-pronged strategy will be implemented to achieve site goals:



Commented [JD4]: Alison, can you update this if we decide to modify the site goal from 10 lbs/day to a concentration? I don't know where this figure was created.

Commented [FA5R4]: Sure - I had put it in as an image to preserve the formatting. I've replaced it with and updated figure.

NERT will remain the task lead for projects associated with selection and implementation of on-site and core plume remedy components, with NDEP approval and under enhanced NDEP direction and oversight. ~~A document describing the process for bringing interim actions from concept to execution in a reduced time frame is provided as Attachment A.~~

NDEP proposes tohas takeen the lead on scoping the remedy component for regional groundwatertehe Downgradient Study Area to address areas at and near the Las Vegas Wash and all the way to Lake Mead. NDEP will perform regional work in the Downgradient Study Area in consultation with EPA and NERT to align on overall budget priorities and technical coordination. As the project progresses, there will be we have included the option of NDEP contracting regional work directly with state contractors or the option of directing NERT to have their contractors perform regional scopes of work.

Interim Removal Actions and GWETS optimization will be developed and proposed as appropriate. by the Technical Committee consistent with the EPA drafted "Proposal for Streamlining Cleanup Process". In general, the Technical Committee will develop concept papers on potential interim actions or optimization efforts. The rRecommended approaches will include the applicable CERCLA- process. If the NDEP, in consultation with EPA and NERT, Decision-makers agree to go forward with the Technical Committee a proposalrecommendation, NDEP will direct NERT to develop workplans for implementation.

NDEP willmay periodically direct NERT to prepare white papers that assess the feasibility, constructability, preliminary cost estimate, effectiveness, and operation and maintenance considerations for the following projects:

1. GWETS Continuous Optimization (1250lbs/day to 2000lbs/day)
    a. Upgrading lift station for AWF (current limitation of 300 gpm)
    b. Shifting flow from SWF to AWF (focus on mass removal, maintain capture)
    c. Extraction Well rehabilitation (Rehab wells that are no longer as productive)
2. SNWA Weir Dewatering Treatment (1000 GPM, 2-3ppm)
3. Unit#4 Contaminated Soils Remediation
4. Installation of additional extraction wells or well fields, slurry walls
    a. Modification of Existing Well Fields (Install deeper wells, additional wells on edges)
    b. Eastern property boundary(Timet)
    c. Warm Springs (behind former Chrome treatment injection gallery)
    d. Source area (unit #4,5)

For reference please see the attached figures:

- Schedule and Options for Remedy Selection and Execution
- NERT Site Regional Area – Existing and Proposed Remediation Infrastructure
- NERT Trustee Experience Managing Environmental Remediation Construction Projects
- Proposal for Streamlining Cleanup Process

What are the Milestones in 2015 2016 for our Strategy?

The following milestones have been established for 2015 to make progress towards the previously stated goals:

1. Reduction of loading of perchlorate concentrations in to the Las Vegas Wash to below 10 pounds per day18 µg/l;

Commented [JD6]: NERT has evolved and the committee process may not be needed. Also the process seemed to be very slow.

Commented [FA7R6]: Agreed we may not need this anymore. I think the introduction of the concept at the start of 2015 to NERT served its purpose of changing the approach towards projects.

Many of these white paper topics have been addressed either through committee calls this year or through the 2016 COP plan.

We should revisit this list during our pre-meeting to discuss what is still remaining to be addressed and if there are new topics.

Commented [HT8R6]: I changed the way it was written to eliminate the technical committee but keep the basic idea of looking for improvements.

Commented [JD9]: Should replace with NERT Downgradient Study Area and NERT RI Study Area Map

Commented [FA10R9]: And COP Areas Map

Commented [JD11]: See above comment, we may not need the committees.

2. Reduction of concentrations of perchlorate in Lake Mead to below lowest anticipated health protective drinking water levels (i.e. 0.5 ug/l);
3. Increase in perchlorate mass removal rates from the current system to above 2,000 pounds per day (equivalent to 360 tons per year);
4. Start phased construction of a final remedy for the site in ~~2021~~2022.

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~~2015~~2016 Milestone Activities	Outcomes	Date
1. Establish up-gradient concentrations of regional contaminants including TDS, arsenic, and perchlorate	Necessary to set final cleanup goals for regional groundwater plume	Completed January 2016
2. NDEP BISC will complete Bureau expansion to support achievement of NERT and NDEP Regional Milestones	Hire 5 additional NDEP staff to: manage overall BMI Complex cleanup; oversee NERT lead work; manage NDEP Lead regional gw technical work; perform field oversight of BMI Complex investigation, cleanup system operation and pilot studies; and perform fiscal oversight, reimbursement and contract management tasks.	February 2016
3. NDEP and ~~its~~ contractor (AECOM) will begin Downgradient Study Area field sampling (surface water and existing wells)	NDEP (AECOM) will begin surface water sampling(LVW) and groundwater sampling	April 2016
4. Downgradient Study Area Geophysics Pilot Test evaluation	NDEP (AECOM) will complete Geophysics pilot test	August 2016
5. Contract/Agreement for USGS Stream Gauge Installation and Seepage Study	NDEP will enter into contract with USGS to complete the installation of 3 additional stream gauges in LVW and conduct 2 seepage studies	July 2016
6. Implement continuous optimization program (COP) of existing groundwater cleanup system by maximizing mass removal of perchlorate from groundwater while maintaining baseline hydraulic capture rates	• NERT will proactively implement the COP • NERT will give NDEP/EPA and Stakeholders monthly Report updates of COP progress. • Achieve increase in perchlorate mass removal rates of 300 pounds per day or a 30% increase.	Implement COP March 2016 COP Results December 2016
7. Revision of contract with groundwater system operating vendor (ETI) to allow for COP and AP-5 Projects	NERT will complete contract revision with ETI to allow for continuous optimization and AP-5 perchlorate treatment.	April 2016
8. Complete soil flushing and In-situ bio pilot studies	NERT Soil Flushing and In Situ Bio Pilot tests will be completed	July 2016
9. Expand soil flushing pilot tests to include larger source area implementation	NERT will expand soil flushing pilot tests to a larger area in the source area of the NERT Site to allow for greater perchlorate mass removal.	Implement~~ed~~ December 2016

~~2015~~ 2016 Milestone Activities	Outcomes	Date
10. Unit #4 sub floor demolition	Complete Unit #4 sub floor demolition to allow for field investigations in Unit #4 to begin.	April 2016
11. Initiate field investigation underneath perchlorate manufacturing areas	Identify residual subsurface sources of contamination that may be leaching into groundwater and assess excavation effectiveness and feasibility	Implement July 2015
12. Remedial Investigation Data Package Tech Memo and Phase II Work Plan Submitted	NERT will submit the Remedial Investigation Data Package Tech Memo and Phase II Work Plan	July 1, 2016
13. NERT to complete "Agreed Upon Procedures" Audit	NERT will complete this annual "audit" and submit it for review	June 2016
14. Expansion of lift station #1 compound near Las Vegas Wash for potential treatment system location.	NERT will enter into an agreement or option to purchase additional land from BRC around the current lift station #1 compound. Assure adequate land is available for aboveground system that is consistent with adjacent proposed land uses	July 2016
15. Slurry and remove ~900 tons of ammonium perchlorate from historic process pond AP-5 into aboveground tanks	Remove potential major source for future groundwater contamination and store in form ready for perchlorate removal through treatment system	December 2016
16. Conduct pilot study for in-situ chrome treatment	Evaluation of in-situ chrome treatment in source area. If option is not viable a new chromium treatment system should be evaluated.	July 2016